Overview
Restoring Interoperability in the Lower 700 MHz Band

- Extensive testing and analyses indicate:
  - No technical impediments to restoring Lower 700 MHz interoperability
  - No cost impact in additional user equipment, base station, or network infrastructure spending
- Interoperability will yield numerous benefits, including:
  - Consumer Benefits: Availability, Affordability, and Customer Satisfaction
  - Competitive Carrier Benefits: Device Scale, Roaming, and Competition
  - Spectrum Efficiency and 4G Deployment Benefits
  - Public Interest Benefits: Innovation, Investment, and Job Growth
- Channel 51 broadcasters do not impact the restoration of interoperability.

Summary of Empirical Measurements

- AT&T continues to voice unsubstantiated claims even though the Commission requested data driven responses

	Lower E Block		Channel 51	
	Lab Tests	**Field Tests**	**Lab Tests**	**Field Tests**
Hyslop-Kolodzy	YES (2 devices tested)	YES	YES (2 devices tested)	YES
V-Comm	YES (7 devices tested)	YES	YES (7 devices tested)	YES
AT&T	NONE	NONE	FLAWED • Specified inadequate emissions control, rendering invalid results (Only 1 device tested)	NONE
Qualcomm	NONE	NONE	FLAWED • Used 2 GHz (European Band) components • Hypothetical device performance assumptions	NONE

Restoring Interoperability has No Cost Impact:

No Additional User Equipment, Base Station, or Network Infrastructure Spending

Considerations	Changes	Additional Costs
700 MHz Handsets, including antennas, duplex filters, power amplifiers, low noise amplifiers, base band hardware, base band software	**No change**: OEM simply installs interoperable filter and software at the factory in lieu of present filter and software	**No additional cost**: OEM simply uses interoperable filter instead of non-interoperable filter at the factory – a replacement with zero difference in cost at scale
700 MHz Base Stations, including antennas, duplex filters, power amplifiers, low noise amplifiers, base band hardware, base band software, network controls	**No change, except a one-time software upgrade** to allow the base station to accept all A, B and C Block Channel Numbering	**No additional cost**: carrier implements the requisite software change during the routine software-update cycle
Channel 51 and 700 MHz E Block Incumbents, including all deployed Channel 51 operations and any 700 MHz E Block deployments	**No change**: extensive field and laboratory testing shows no changes required	**No additional cost**: current Band Class 12 and Band 17 LTE systems have identical performance specifications to manage Channel 51 operations and Band Class 12 already effectively manages high power E Block deployments

Interoperability Effect on Device Capabilities & Requirements

With interoperability, new mobile devices would be technically capable of communicating across any network that deploys A, B or C Block base stations. All existing mobile devices would be unaffected and continue to work as they do today.

Keys Components	Requirements Impact	Cost Impact
Antenna	No Change	None
Duplex Filter	New component becomes common to all Lower 700 MHz mobile devices	None – production and installation of alternative duplex filter imposes no additional costs at scale
Power Amplifier	No Change	None
Low Noise Amplifier	No Change	None
Base Band Hardware	No Change	None
Base Band Software	Band 12 vs. Band 17 Software	None – software loaded as part of manufacturing process

Interoperability Effect on Base Station Capabilities and Requirements

With interoperability, Lower 700 MHz base stations that operate on either A, B or C Blocks would be upgraded, via a routine software update, to enable communications with all Lower 700 MHz mobile devices supporting the same air interface technology.

Key Components	Requirements Impact	Cost Impact
Antenna	No Change	None
Duplex Filter	No Change	None
Power/Low Noise Amplifier	No Change	None
Base Band Hardware	No Change	None
Base Band Software	A one-time software upgrade to accept all A, B and C Block Channel Numbering	None – accomplished during routine software update cycle
Network Control	No Change	None

Interoperability Effect on Currently Deployed Network Capabilities & Requirements

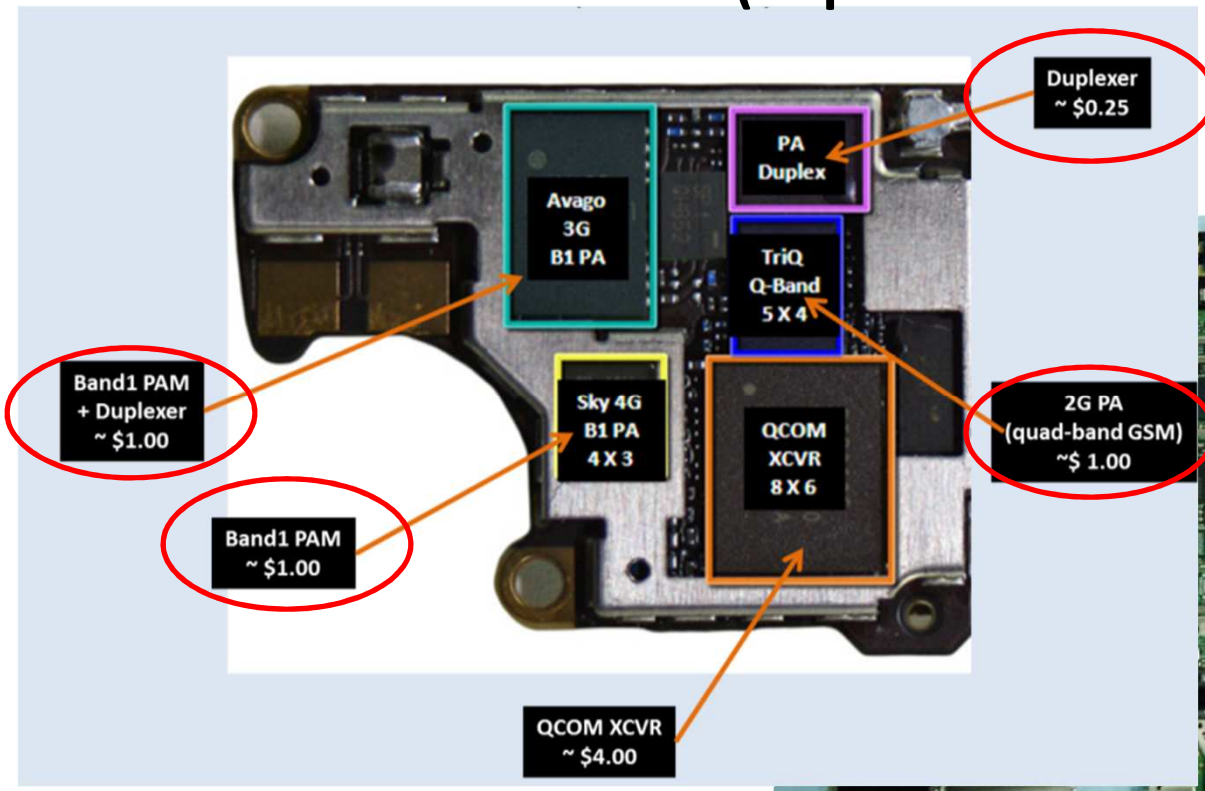
- With interoperability, current network radio frequency designs and deployments would remain unchanged.
- All new Lower 700 MHz mobile devices would be technically capable of communicating with all A, B and C Block networks.

Deployment Considerations	Requirements Impact	Cost Impact
Cell Tower Proximity to Channel 51 Transmitters	No change – testing shows no changes required	None – Band 12 and Band 17 3GPP specifications are currently identical for managing potential interference from Channel 51 transmissions
Cell Tower Proximity to E Block Transmitters	No change – testing shows no changes required; Band 12 devices comply with Band 17 3GPP specifications with respect to E Block	None

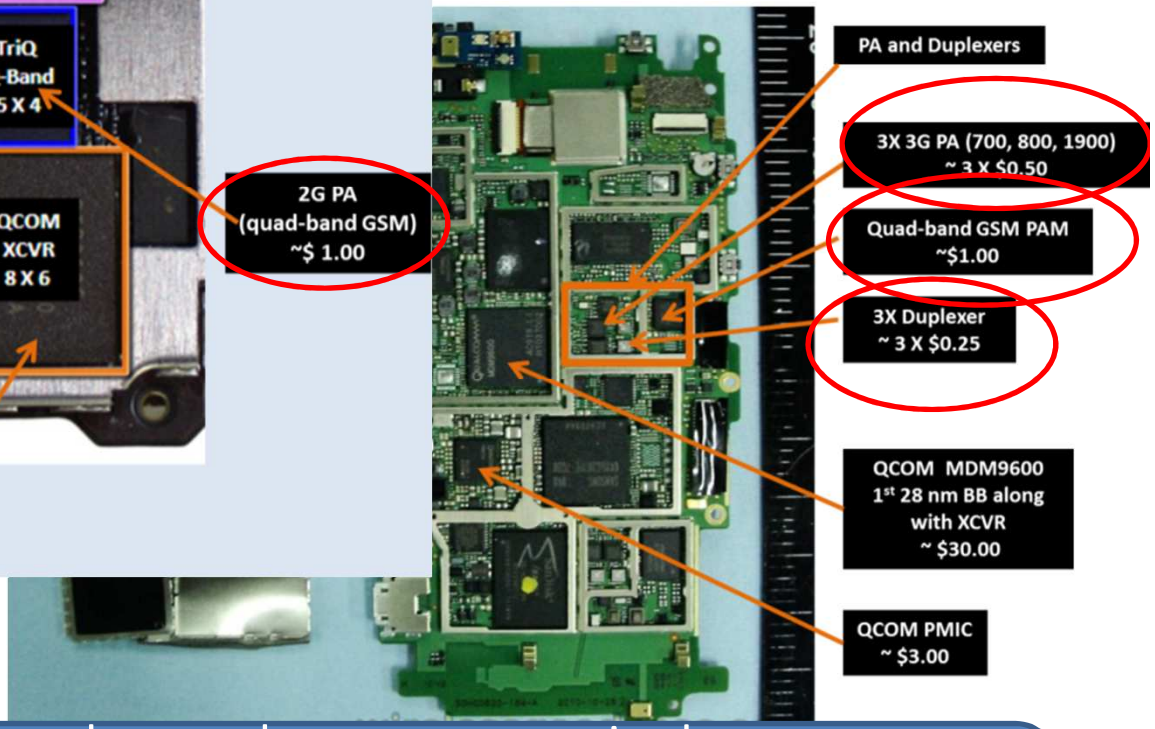
No Cost Increases Anticipated in Either Apple or Android Bill of Materials

(Impact of Band Class 12)

iPhone 4S



HTC Thunderbolt



Device Performance indicates that no changes are required except to simply broaden the duplexer to cover Lower A, B and C Blocks. However, if new filter (and potentially new Power Amplifier Module) components are required, similar BOMs component prices are all < $1 and, in quantity, have no cost impact.